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that contain extensive alluvial deposits, composed chiefly of blue clay impregnated with marine salt, and rich in decomposed vegetable matter. On large plantations the trees are usually planted from twelve to fifteen feet apart, in the form of squares, and where irrigation is required, trenches are dug between them to admit the water passing through as often as it is necessary. In places where the rain is abundant, or where the soil is damp, the bananas grow best. It is generally at the end of nine months that the plants mature, and after that time the fruit can be gathered every week in the year, provided the plantation has been well kept, and has had a good start. At that time the trunk of the tree attains a height of eight or ten feet, and a girth of about thirty-six inches. From the trunk, which is porous and yields an excellent fibre, palm-like branches are thrown out to the number of six or seven. The bunch of fruit appears at the juncture of the trunk and branches, and consists of from four to twelve of what are termed "hands," each hand having eight to twelve bananas on it. A bunch of eight hands or clusters is counted as a full bunch; while those that have from five to seven are taken as a half bunch; bunches not less than five hands are styled third class, the others respectively first and second class. From the root of this tree several shoots or suckers sprout, each of which in turn becomes a tree, and bears a bunch of bananas, or they may be transplanted. After a bunch has been cut, the tree is usually felled; in fact, the tree is more frequently cut to gather the fruit. The manner in which the banana is cultivated is most easy, as very little skill or labor is demanded, nature doing almost all the work.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

Origin of the Galapagos Rookeries.

It is generally supposed that animals now living in latitudes bordering the polar circles are naturally confined to the cool regions of the earth, and such is usually the case; but there are some remarkable exceptions to this rule. Such, for instance, are the rookeries of albatross, fur seal, and penguin at the Galapagos Islands.

That this equatorial group of islands is inhabited by a fauna usually confined to the high latitudes has long been known to Pacific navigators, and also to such celebrated naturalists as Darwin and Agassiz, who visited them years ago. Still, there seems to be no satisfactory explanation offered to show why the fauna of the cold latitudes should now exist at the equator.

It may be that neither of the above naturalists, while having knowledge of the rookeries of hair seal, knew that a small rookery of fur seal made its home under the almost inaccessible cliffs of Abingdon, or that albatrosses had their hatching place on the shores of Hood's Island, or that a small species of penguin frequented the shores of Albemarle.

Under the present climatic conditions of our globe, it is not likely that the fauna of the cold regions would have selected breeding places under the equator, especially when such rookeries are so far removed from their normal home in the high latitudes. As their inhabitants are never seen far from the land of birth, I for many years after my first visit to these islands was unable to supply myself with a satisfactory solution of the problem. I at first thought that the albatrosses may have made the passage from their tropical rookery to the high latitudes through the upper atmosphere, which their great power of flight would enable them to accomplish. But I have since come to the conclusion that the Galapagos rookeries are the relics of a frigid period, and that their progenitors sought out these seemingly unnatural breeding places at a time when the climate of the Galapagos was much colder than now.

When we consider the low temperature which the eastern Pacific waters must have possessed during the ice-age, when the lands of southern Chili, and the shores of North America as far south as Oregon, were launching icebergs into the sea to be floated

directly towards the Galapagos by the prevailing ocean currents, we can conceive how during such a frigid age the fauna of the high latitudes found a fitting home within this portion of the tropics. And it is owing to the ocean currents which still move from the high latitudes along the North and South American coasts, and cool the Galapagos seas, and also to the strong attachment of such species of life for their breeding places, that they have been able to continue, a feeble remnant, until the present century. Moreover, the isolated situation of the Galapagos may have aided, at the close of the ice period, to prevent the abandonment of the rookeries for a more congenial latitude. The nearest lands now suitable and occupied by such species of animals, as before stated, are situated in the high latitudes, thousands of miles distant from the Galapagos, while the wide intervening seas afford no signs of the albatross, seal, or penguin; and it is the opinion of seamen who are acquainted with the Galapagos rookeries that their occupants are confined to the seas of that region.

The rookeries of sea-lions found on these islands, and so well described by Mrs. Agassiz, are also far removed from the usual breeding places of such animals, the sea-lions of California being their nearest neighbors.

The large tortoises which inhabit the Galapagos, and from which the islands derive their name, probably emigrated at an early date from the American coast, which is some four hundred miles distant; for I have noticed that they appear quite at home in the water.

The progenitors of the terrestrial iguanas found on Albemarle, probably lived in the ocean in the remote past, according to Darwin's opinion, and are consequently related to the sea iguanas which abound in those waters.

C. A. M. TABER.

Wakefield, Mass., May 16.

BOOK-REVIEWS.

A Journal of American Ethnology and Archæology. Edited by J. WALTER FEWKES. Vol. I. Boston and New York, Houghton, Mifflin, & Co., 1891.

Report of the Proceedings of the Numismatic and Antiquarian Society of Philadelphia for the Years 1887-1889. Philadelphia, printed for the society, 1891.

THE *Journal of American Ethnology* is scarcely such in the usual acceptance of the term. Its whole contents consist of three papers by the editor, all of them from his notes when connected with the Hemenway South-western Archæological Expedition. The first is entitled "A Few Summer Ceremonials at Zúñi Pueblo," principally descriptive of various dances. The second is on "Zúñi Melodies," the notes of which were obtained by Dr. Fewkes on phonographic cylinders exposed to the singing of various members of the Zúñi tribe, and subsequently taken down from the hearing with the aid of a harmonium. The instrumental study of the melodies is the work of Mr. Benjamin Ives Gilman, and is admirably presented. The third paper, accompanied with a map, describes a "Reconnaissance of Ruins at or Near the Zúñi Reservation." These ruins are those of the former residences of the Zúñi tribe, and are eighteen in number, though the reconnaissance is not asserted to embrace all that remain.

The *Journal* is admirably printed, well-illustrated, and full of excellent original material, although its title seems a misnomer.

The volume of proceedings of the Numismatic and Antiquarian Society of Philadelphia, edited by its efficient secretary, Mr. Stewart Culin, contains the usual lists, etc., and seven original papers, of all of which we can speak in terms of praise. One is by Mr. Culin himself, on a curious secret society among the Chinese in America, and two are by the Rev. Dr. W. M. Beauchamp, on the Onondagas and the early medals, crosses, rings, etc., found among them. Mr. B. S. Lyman, a high authority on all Japanese matters, describes an old Japanese standard foot measure; Mr. Frances Jordan, jun., speaks of aboriginal American wood-working; and the president of the society, Dr. Daniel G. Brinton, contributes a study of the character of American aboriginal poetry, and also an interpretation of a celebrated rock-inscription near Orizaba, Mexico, called "The Stone

of the Giants." Besides these, a number of abstracts of other papers are given. The volume is illustrated with numerous engravings, and is issued in creditable style. The society is to be congratulated on this evidence of its prosperity.

The Old Navy and the New. By REAR-ADMIRAL DANIEL AMMEN. Philadelphia, Lippincott. 8°. \$3.

IN these days of the new navy we are apt to forget the old-timers, and all that they did to build up a solid foundation and educate the younger officers, so that the modern vessels can in their turn be models of efficiency as the wooden craft were. In this work the author tells a plain story of events, at home and abroad, just as he found them; and although he had no very startling adventures to punctuate his active career, there are many valuable lessons for officers about starting out for a naval life. The excellent habit of keeping a diary here bears good fruit, as the main dependence has quite evidently been placed upon notes taken at the time, with an occasional "freshening of the nip" by reference to official logs kept on board the vessels and afterward turned in to the navy department.

Among other points worthy of note are the meeting for the first time with men-of-war fitted with steam machinery, rifled guns, and other modern improvements of the day. The idea of the life-raft, or "balsa," which now forms an important feature in the outfit of vessels of war as well as passenger steamers, and for which thanks are largely due the author, seems to have struck him quite early in life. The efficiency of the ram as a fighting factor also impressed itself upon the admiral years ago, and the outcome is the modern ram that is now building for the navy.

The experience gained while on duty in the coast survey, and at the naval observatory, enabled the admiral, while chief of the Bureau of Navigation, to have carried on some very scientific work in relation to determining longitudes by telegraphy, and also surveys of the Isthmus, which latter are to-day resulting in the construction of the Nicaraguan Canal.

The former work by the same author, "The Atlantic Coast during the Civil War," so effectually covers the period of the Civil War that the present work unfortunately deals but slightly with the interesting events of that period. A very prominent feature of the book is the intimacy from boyhood that existed between the author and General Grant. The close of the volume contains some very interesting letters, which, among other things, show very plainly the very high regard and the warm friendship that the great hero of the war had for the admiral.

The book commends itself not only to professional men but to all who take a proper interest in the well-being of the navy.

AMONG THE PUBLISHERS.

AMONG the articles in *The Chautauquan* for June are, "The Intellectual Development of the English People," by Edward A. Freeman; "Hungary's Progress and Position," by Albert Shaw; "Studies in Astronomy, IX.," by Garrett P. Serviss; "The American Patent System," by Walter Hough; "Dr. Schliemann—The Excavator of Ancient Troy," by Thomas D. Seymour; "American Glass Workers," by F. M. Gessner; "Periodic Changes in Climate," by E. Richter; "The Latest Phases of Electricity," by Robert W. Prentiss; and "College Girls," by Kate Gannett Wells.

—"Philomythus, an Antidote against Credulity," Dr. Abbott's new book, is devoted to a discussion of Cardinal Newman's essay on ecclesiastical miracles. It will appear in a second edition, with a new preface, from the press of Macmillan & Co., New York.

—Mr. H. E. Haferkorn, Milwaukee, Wis., has published a translation, by Dr. Fr. Brendecke, of Koch's first communication to the *Deutsche Medicinische Wochenschrift* on the cure of tuberculosis. Explanatory notes have been inserted and the subject put into more popular shape by the editor, Dr. Max Birnbaum.

—D. C. Heath & Co., Boston, are just issuing "Comparative View of the Executive and Legislative Departments of the Governments of the United States, France, England, and Germany," by John Wenzel, assistant librarian of the College of Liberal Arts, Boston University. This consists of outlines of the four great constitutional governments, arranged in parallel columns in such

a way that similar topics are grouped together. By this arrangement comparison can readily be made. Professor Woodrow Wilson of Princeton, the author of "The State," has examined the manuscript, and made suggestions and corrections.

—The seventh volume of the new edition of "Chambers's Encyclopædia," to be published in June by the J. B. Lippincott Company, will contain articles on "Mysteries," by Baring-Gould; "Cardinal Newman," by Hutton; and Mr. Blackmore discourses about orchards; Stanley Lane-Poole writes about "Mecca and Medina," Dr. Head on "Numismatics," Dr. John Murray on the "Pacific," and Canon Taylor on "Names." "Palestine" engages two contributors, Mr. Besant and Professor Hull.

—Certainly an entirely new departure in journalism is made in *The Engineering Magazine*, the first number of which appeared in April. This is not an addition to the numerous trade papers, but is intended to give each month, in untechnical language, articles by competent writers on engineering matters likely to interest the public. Such topics are: "Epidemics and Water Pollution," treated by George W. Rafter; "Danger Signals about the Boiler," by Robert Grimshaw; "The Rapid Transit Problem in New York," by T. Graham Gribble; "Building the Steamship in America," by Horace Lee; "The Tall Office-Buildings of New York," by John Beverley Robinson; "Our Old-Fogy Methods of reckoning Time," by Sanford Fleming; and "Splendid Record of the Electric Railway," by Frank J. Sprague. All these and more appear in the May number. The Engineering Magazine Company, World Building, New York City, are the publishers.

—The North Carolina Experiment Station has just issued a twenty-page bulletin (No. 76) on plant-diseases, by Gerald McCarthy, the station botanist, illustrated by eleven engravings showing the appearance of diseased plants and the best forms of spraying-apparatus. This bulletin contains a brief and pointed chapter on vineyard and orchard hygiene, and treats in full of the following diseases: rot, mildew, and anthracnose of the grape; peach-rot; black-knot of plum and cherry; apple, pear, and quince scab; leaf-blight of pear; fire-blight of pear; peach-yellows; potato-blight; rust of cereals; bunt of wheat; smut of oats; smut of corn; ergot of rye. This bulletin will be sent free to all names on the regular mailing list of the station, and to others within the State who apply for it. Only a limited number of copies will be available for distribution outside the State. These will be sent, so long as the supply lasts, to applicants who inclose six cents. Address North Carolina Experiment Station, Raleigh, N.C.

—Messrs. Fords, Howard, & Hulbert have published a small book by Amos K. Fiske entitled "Beyond the Bourn." It purports to give the experience of a man during a visit to the spirit-world, whither he was transported while he lay unconscious from a railroad accident. He meets his old friends in the spirit-world, who instruct him in the mysteries and the enjoyments of the life they lead. A considerable portion of the book, however, is occupied with the account of a visit which he and his spirit friends made to a planet far distant from the earth, but peopled by a race of beings similar to men, only in a more advanced stage of development. They are represented as living in a veritable Utopia, surpassing even Mr. Bellamy's; yet they have reached it by voluntary action and co-operation without any help from the State. The book is fantastic throughout, and for the most part shallow, and it sheds no light on the great subjects with which it deals.

—Some photographs of luminous objects (taken by their own light) will be reproduced in the June *Scribner* by mechanical processes, directly from the original negatives. All amateurs will be interested in the pictures, which show fireworks, interiors by lamplight, rolling-mills, electric discharges, sun-dogs, and other curious subjects. William H. Rideing (who has all his life been familiar with steamship affairs) contributes to the same number the third of the Ocean Steamship series, on "Safety on the Atlantic." He gives an account of the precautions and devices which have made ocean travel one of the safest methods of locomotion. He prints the following remarkable record for 1890: "Nearly two thousand trips were made from New York alone to